

09/597,236

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Response  
J. White  
3-4-03

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Akihiko YAGASAKI

Appl. No. 09/597,236

Filed: June 20, 2000

For: ISOLATION TRANSFORMERS

Art Unit: 2832

Examiner: Tuyen T. Nguyen

Atty. Docket No. 37174-164287

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Sir:

This is in response to the final Office Action mailed on August 28, 2002.

The courtesy of Examiner Nguyen in granting an interview to the applicant's attorney and his help during the interview are gratefully acknowledged.

During the interview, the Examiner pointed out that the structure of the coil of the Lungu reference is like the structure of the coils of FIGS. 7 and 8 of the present application.

The Examiner is correct that Lungu does disclose a wire having a core conductor 1, a dielectric insulation 2 surrounding the core conductor and a thin metalization layer 3 on the dielectric insulation 2, the wire being formed into a coil.

However, there are important differences between the Lungu device and both the

Applicant: Akihiko YAGASAKI  
Appl. No. 09/597,236

independent claim and the embodiment of FIGS. 7 and 8 of the present application, and the Examiner is respectfully requested to consider the differences. The applicant's attorney had not considered the differences at the time of the interview.

Specifically, FIG. 7 of the present application shows two coils 1 and 2, each comprising multi-layers and multi-windings of an insulated, covered wire, the coils together comprising an isolation transformer.

Claim 18 calls for two coils, a primary coil and a secondary coil, each having multi-layers and multi-windings of an insulated, covered wire. Claim 18 also calls for a plurality of short-circuit rings made of conducting thin films sandwiched between the layers of at least one of the coils.

Lungu does not disclose nor suggest the two coils of FIGS. 7 or claim 18. In Lungu, only a single coil is used.

Where Lungu suggests using his coil as a transformer, he does not suggest using two of the coils each formed by winding an insulated, covered wire. Instead, as can be seen from column 14, line 50-column 15, line 23 of Lungu and FIGS. 14 and 15, the transformers of Lungu use the core 1 of the wire as a first coil and the thin film exterior metalization 3 as the second coil. At least the thin film metalization 3 does not satisfy the requirement of claim 18 of a multi-layer, multi-winding coil formed by winding an insulated, covered wire. The thin film metalization 3 is not insulated nor covered.

The applicant is mindful that claim 18 was not rejected as under 35 USC 102 as being

Applicant: Akihiko YAGASAKI  
Appl. No. 09/597,236

anticipated by Lungu but rather under 35 USC 103 on the basis of McLoughlin in view of Lungu. In that regard, for at least the reasons described above, it would not have been obvious to modify McLoughlin in view of Lungu in the manner proposed by the Examiner in the final rejection.

There is nothing in the references that suggest they be combined. According to *In re Fine*, 5 USPQ2d 1596,1600 (Fed. Cir. 1988), "teachings of references can be combined only if there is some suggestion or incentive to do so" (emphasis by the court). The fact that disclosures of references can be combined does not make the combination obvious unless the art also contains something to suggest the desirability of the combination (*In re Imperato*, 179 USPQ 730 (CCPA 1973). In the present situation, the prior art does not contain anything to suggest the desirability of the combination. McLoughlin does not suggest the desirability of using coils like those of Lungu, and Lungu does not suggest the use of its coils in the device of McLoughlin. McLoughlin uses a primary winding 24 and a secondary winding 26, with a metallic shield 28 between them. As was stated above, Lungu teaches that, when its coil is used as a transformer, the core 1 constitutes a first winding and the thin metalization layer 3 on the outside of the insulation 2 constitutes a second winding. Thus, Lungu actually teaches away from the use of its coil in an arrangement like that of McLoughlin, two distinct windings with a metallic shield in between, thereby rendering the combination unobvious.

Furthermore, as is described in the present application, the present invention provides an isolation transformer with high noise attenuation rates, as well as high reliability by sufficiently suppressing the amplitude of noise attenuation characteristic curves. Neither of the references

Applicant: Akihiko YAGASAKI  
Appl. No. 09/597,236

addressed this problem or attempted to solve it. According to *In re Shaffer*, 108 USPQ326 (CCPA 1956), one having references before him who was not cognizant of the applicant's disclosure would not be informed that the problem solved by the applicant ever existed. The court added that references which never recognized the applicant's problem can not have suggested its solution and that, therefore, the references were improperly combined since there is no suggestion in either of them that they can be combined to produce the applicant's result. In view of the foregoing, it is believed to be clear that the combination would not have been obvious and that, therefore, claim 18 is patentable.

The Examiner's consideration of the following additional differences between the isolation transformer of claim 18 and the prior art is respectfully requested.

The device to which the claimed invention of Lungu is applied is not an isolation transformer capable of cutting off high frequency noises, but an electric component with inductive and capacitive properties.

It seems that the Examiner compares the coil 4 with multi-layers and multi-windings shown in FIG. 1 and FIG. 2 of the Lungu without, as Lungu describes it, the "arbitrary cross-section I" to the coil with a primary coil with multi-layers and multi-windings, a secondary coil with multi-layers and multi-windings and a core, and the latter is only a coil with multi-layers and multi-windings shown in FIGS. 7 and 8 of the present embodiments. However, the coil 4 with multi-layers and multi-windings shown in FIG. 1 and FIG. 2 of the Lungu without the "arbitrary cross-section I" is a defective part as an electric component with inductive and

Applicant: Akihiko YAGASAKI  
Appl. No. 09/597,236

capacitive properties. That is, when the wire WD is wound into a coil, the thin film metalization layer 3 of the Lungu reference does not comprise the plurality of short circuit rings made of conducting thin films sandwiched between the coil layers as is called for by claim 18. The reason is that the arbitrary cross-section I is formed on the coil 4 by "burning out" the metalization 3, in order to prevent short-circuit currents from flowing on the surface of the conducting thin films sandwiched between the coil layers, as shown in FIG. 2 and FIG. 3 and described in column 4, lines 35-50.

The arbitrary cross-section I on the coil 4 or the "burning-out" of the metalization 3 is the essential matter of the patented invention of Lungu, in order to get the electric component with inductive and capacitive properties.

There is neither a description nor suggestion in the Lungu reference that the wire WD is wound into a coil so as to comprise the plurality of short circuit rings made of conducting thin films sandwiched between the coil layers, or that the coil with the plurality of short circuit rings is useful for composing an isolation transformer capable for cutting off high frequency noises.

By the way, the Ganz reference does not give any suggestion which is useful for achieving the present invention, because the ends of each conductive strip (copper foil layers 26-30) are either insulated or spaced from one another in order to prevent formation of short-circuit turns (column 3, lines 39-42).

Each of the prior art references cited by the Examiner simply shows how to prevent the effect of "short-circuit currents". On the contrary, the present invention has been achieved by

Applicant: Akihiko YAGASAKI  
Appl. No. 09/597,236

using "short-circuit currents" intensively.

Dr. Akihiko Yagasaki, the pioneer of noise isolation transformers or noise cutoff transformers and the present inventor, has changed the negative effects into positive ones with regard to "short-circuit currents" in the high frequency band. Last year, WASEDA UNIVERSITY, one of the highest ranking universities in Japan, granted him a doctor's degree based upon his prominent research on noise isolation transformers. The report "Highly Improved Performance of a Noise Isolation Transformer by a Thin-Film Short-Circuit Ring", IEEE TRANSACTION ELECTROMAGNETIC COMPATIBILITY Vol. 41 No. 3, August 1999, is said to be one of the leading and valuable reports on noise isolation transformers.

The present invention has only been made by the inventor, based on his original conception to use "short-circuit currents" effectively.

It is clear now that the embodiments of FIGS. 7 and 8 greatly differ from the coil 4 with multi-layers and multi-windings shown in FIG. 1 and FIG. 2 of the Lungu without the "arbitrary cross-section I", because the former is an isolation transformer comprising a primary coil with multi-layers and multi-windings, a secondary coil with multi-layers and multi-windings and a core, and the latter is only a coil with multi-layers and multi-windings.

And there is neither description nor suggestion on how to use the coil 4 with multi-layers and multi-windings shown in FIG. 1 and FIG. 2 of the Lungu without the "arbitrary cross-section I", except for the description in which it is used as a part of an electric component with inductive and capacitive properties.

Applicant: Akihiko YAGASAKI  
Appl. No. 09/597,236

Therefore, it is submitted the claims, which cover at least the embodiments of FIGS. 7 and 8 and all the other disclosed embodiments, are patentable over the cited references.

It is believed that no fees are due for the submission of this Response. If any such fees are required, please charge any additional fees and/or credit any fees to our Deposit Account 22-0261.

A notice of allowance is believed to be in order and is respectfully requested.

Respectfully submitted,

Date: 2-27-03



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